EXISTING SITE SAFETY PLAN ADDENDUM FORM

Site Name: Dayton Electroplating

TDD/Pan/Project Number: 505-9609-018
6P1801SI

Date of original SSP: 9/23/96

Date of amendment: 10/1/96

N 39°46.724'
W 84°09.762'

Date of proposed new work: ~~10/7/96~~ 10/11/96

Added activities and hazard evaluations: No change in activities or hazard evaluations. Site work rescheduled by U.S. EPA

Added monitoring activities: Same as original

Level of Protection: ___ A X B X C ✓ D

Reason for up/downgrading:

PPE: See original plan.

Decons: See original plan.

Team Members	Responsibility
See original plan.	
Cedric Gibson	replaces Mark Durno

Equipment	Quantity	Equipment	Quantity
See original plan.			

THE TERMS OF THE ORIGINAL SSP SHALL BE IN EFFECT EXCEPT AS NOTED ON THIS FORM.

Prepared by: Karen M Waldron Date: 10/1/96

Approved by: [signature] Date: 10-1-96

INSTRUCTIONS: This form to be approved through normal channels and attached to original plan. Form SSP-A
RS032(10/08/90)

Revision: 0
July 1994

ecology and environment, inc.

SITE-SPECIFIC
HEALTH AND SAFETY PLAN

Project: Dayton Electroplating

Project No.: KJ5100

TDD/PAN No.: 505-9609-018 / 6P1801SF

Project Location: 1030 Valley Street, Dayton, Montgomery Co., OH 45404

Proposed Date of Field Activities: 9/27/96

Project Director: NA

Project Manager: KAREN M. WALDRON

Prepared by: Karen M Waldron Date Prepared: 9/23/96

Approved by: Date Approved: 9.23.96

1. INTRODUCTION

1.1 POLICY

It is E & E's policy to ensure the health and safety of its employees, the public, and the environment during the performance of work it conducts. This site-specific health and safety plan (SHASP) establishes the procedures and requirements to ensure the health and safety of E & E employees for the above-named project. E & E's overall safety and health program is described in *Corporate Health and Safety Program for Toxic and Hazardous Substances* (CHSP). After reading this plan, applicable E & E employees shall read and sign E & E's Site-Specific Health and Safety Plan Acceptance form.

This SHASP has been developed for the sole use of E & E employees and is not intended for use by firms not participating in E & E's training and health and safety programs. Subcontractors are responsible for developing and providing their own safety plans.

This SHASP has been prepared to meet the following applicable regulatory requirements and guidance:

Applicable Regulation/Guidance
29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER)
Other: NA

1.2 SCOPE OF WORK

Description of Work: Perform site assessment at abandoned electroplating facility. Activities to include photo/video documentation, inventory of vats and drums, and sampling of vats, drums, and transformers.

Equipment/Supplies: Attachment 1 contains a checklist of equipment and supplies that will be needed for this work.

The following is a description of each numbered task:

Task Number	Task Description
1.	Site Walkthrough.
2.	Photo/video documentation.
3.	Air monitoring.
4.	Inventory vats, drums, and containers.
5.	Sample drums, vats, containers, and/or transformers.
6.	Decontamination.

1.3 SITE DESCRIPTION

Site Map: A site map or sketch is attached at the end of this plan.

Site History/Description (see project work plan for detailed description): Electroplating Facility abandoned in April/May of 1996. Facility previously conducted both acid and cyanide based electroplating operations. Process tanks remain full, and drums of questionable integrity are scattered throughout the site buildings.

Is the site currently in operation? ☐ Yes ☒ No

Locations of Contaminants/Wastes: Assume entire site to be contaminated, wastes believed to be present within site buildings only, however.

Types and Characteristics of Contaminants/Wastes:

☒ Liquid	☒ Solid	☒ Sludge	☒ Gas/Vapor
☒ Flammable/Ignitable	☒ Volatile	☒ Corrosive	☐ Acutely Toxic
☐ Explosive	☐ Reactive	☐ Carcinogenic	☐ Radioactive
☐ Medical/Pathogenic	Other:		

2. ORGANIZATION AND RESPONSIBILITIES

E & E team personnel shall have on-site responsibilities as described in E & E's standard operating procedure (SOP) for Site Inspection. The project team, including qualified alternates, is identified below.

Name	Site Role/Responsibility
Karen Waldron	Project/Task Manager
Jeff Kimble	Site Safety Officer
	Team Member/Sampler
Steve Renninger	U.S. EPA OSC

3. TRAINING

Prior to work, E & E team personnel shall have received training as indicated below. As applicable, personnel shall have read the project work plan, sampling and analysis plan, and/or quality assurance project plan prior to project work.

Training	Required
40-Hour OSHA HAZWOPER Initial Training and Annual Refresher (29 CFR 1910.120)	X
Annual First Aid/CPR	X
Hazard Communication (29 CFR 1910.1200)	X
40-Hour Radiation Protection Procedures and Investigative Methods	NA
8-Hour General Radiation Health and Safety	NA
Radiation Refresher	NA
DOT and Biannual Refresher	NA
Other:	NA

4. MEDICAL SURVEILLANCE

4.1 MEDICAL SURVEILLANCE PROGRAM

E & E field personnel shall actively participate in E & E's medical surveillance program as described in the CHSP and shall have received, within the past year, an appropriate physical examination and health rating.

E & E's health and safety record (HSR) form will be maintained on site by each E & E employee for the duration of his or her work. E & E employees should inform the site safety officer (SSO) of any allergies, medical conditions, or similar situations that are relevant to the safe conduct of the work to which this SHASP applies.

4.2 RADIATION EXPOSURE

4.2.1 External Dosimetry

Thermoluminescent Dosimeter (TLD) Badges: TLD badges are required to be worn by all E & E field personnel on all E & E sites.

Pocket Dosimeters: NA

Other: NA

4.2.2 Internal Dosimetry

☐ Whole body count ☐ Bioassay ☐ Other

Requirements: NA

4.2.3 Radiation Dose

Dose Limits: E & E's radiation dose limits are stated in the CHSP. Implementation of these dose limits may be designated on a site-specific basis.

Site-Specific Dose Limits: NA - Quarterly TLD badge only

ALARA Policy: Radiation doses to E & E personnel shall be maintained as low as reasonably achievable (ALARA), taking into account the work objective, state of technology available, economics of improvements in dose reduction with respect to overall health and safety, and other societal and socioeconomic considerations.

5. SITE CONTROL

5.1 SITE LAYOUT AND WORK ZONES

Site Work Zones: Refer to the map or site sketch, attached at the end of this plan, for designated work zones.

Site Access Requirements and Special Considerations: Access coordinated by U.S. EPA.

Illumination Requirements: Work to be completed during daylight hours. Indoor lighting of work areas to be provided by START.

Sanitary Facilities (e.g., toilet, shower, potable water): Drinking water to be supplied by START.

On-Site Communications: 2-way radios to be used by sampling team. Mobile phone available in OSC Benninger's Vehicle.

Other Site-Control Requirements: NA.

5.2 SAFE WORK PRACTICES

Daily Safety Meeting: A daily safety meeting will be conducted for all E & E personnel and documented on the Daily Safety Meeting Record form or in the field logbook. The information and data obtained from applicable site characterization

and analysis will be addressed in the safety meetings and also used to update this SHASP, as necessary.

Work Limitations: Work shall be limited to a maximum of 12 hours per day. If 12 consecutive days are worked, at least one day off shall be provided before work is resumed. Work will be conducted in daylight hours unless prior approval is obtained and the illumination requirements in 29 CFR 1910.120(m) are satisfied.

Weather Limitations: Work shall not be conducted during electrical storms. Work conducted in other inclement weather (e.g., rain, snow) will be approved by project management and the regional safety coordinator or designee.

Other Work Limitations: NA

Buddy System: Field work will be conducted in pairs of team members according to the buddy system.

Line of Sight: Each field team member shall remain in the line of sight and within verbal communication of at least one other team member.

Eating, Drinking, and Smoking: Eating, drinking, smoking, and the use of tobacco products shall be prohibited in the exclusion and contamination reduction areas, at a minimum, and shall only be permitted in designated areas.

Contamination Avoidance: Field personnel shall avoid unnecessary contamination of personnel, equipment, and materials to the extent practicable.

Sample Handling: Protective gloves of a type designated in Section 7 will be worn when containerized samples are handled for labeling, packaging, transportation, and other purposes.

Vermiculite Handling: Respiratory protection (i.e., high-efficiency particulate air filtration) is recommended when vermiculite is used to package samples into shipping containers (some vermiculite contains low concentrations of asbestos).

Other Safe Work Practices: NA

6. HAZARD EVALUATION AND CONTROL

6.1 PHYSICAL HAZARD EVALUATION AND CONTROL

Potential physical hazards and their applicable control measures are described in the following table for each task.

Hazard	Task Number	Hazard Control Measures
Biological (flora, fauna, etc.)	1,2,3,4,5,6	• Potential hazard: poison ivy • Establish site-specific procedures for working around identified hazards. • Other: Insect bites
Cold Stress	NA	• Provide warm break area and adequate breaks. • Provide warm noncaffeinated beverages. • Promote cold stress awareness. • See *Cold Stress Prevention and Treatment* (attached at the end of this plan if cold stress is a potential hazard).
Compressed Gas Cylinders	NA	• Use caution when moving or storing cylinders. • A cylinder is a projectile hazard if it is damaged or its neck is broken. • Store cylinders upright and secure them by chains or other means. • Other: NA
Confined Space	NA	• Ensure compliance with 29 CFR 1910.146. • See SOP for Confined Space Entry. Additional documentation is required. • Other: NA
Drilling	NA	• See SOP for Health and Safety on Drilling Rig Operations. Additional documentation may be required. • Other: NA • Other: NA
Drums and Containers	1,2,3,4,5,6	• Ensure compliance with 29 CFR 1910.120(j). • Consider unlabeled drums or containers to contain hazardous substances and handle accordingly until the contents are identified. • Inspect drums or containers and assure integrity prior to handling. • Move drums or containers only as necessary; use caution and warn nearby personnel of potential hazards. • Open, sample, and/or move drums or containers in accordance with established procedures; use approved drum/container-handling equipment. • Other:
Electrical	1,2,3,4,5,6	• Ensure compliance with 29 CFR 1910 Subparts J and S. • Locate and mark energized lines. • De-energize lines as necessary. • Ground all electrical circuits. • Guard or isolate temporary wiring to prevent accidental contact. • Evaluate potential areas of high moisture or standing water and define special electrical needs. • Other: NA
Excavation and Trenching	NA	• Ensure that excavations comply with and personnel are informed of the requirements of 29 CFR 1926 Subpart P. • Ensure that any required sloping or shoring systems are approved as per 29 CFR 1926 Subpart P. • Identify special personal protective equipment (PPE) (see Section 7) and monitoring (see Section 8) needs if personnel are required to enter approved excavated areas or trenches.

Hazard	Task Number	Hazard Control Measures
Excavation and Trenching (Cont.)	NA	• Maintain line of sight between equipment operators and personnel in excavations/trenches. Such personnel are prohibited from working in close proximity to operating machinery. • Suspend or shut down operations at signs of cave in, excessive water, defective shoring, changing weather, or unacceptable monitoring results. • Other: NA • Other: NA
Fire and Explosion	1,2,3,4,5,6	• Inform personnel of the location(s) of potential fire/explosion hazards. • Establish site-specific procedures for working around flammables. • Ensure that appropriate fire suppression equipment and systems are available and in good working order. • Define requirements for intrinsically safe equipment. • Identify special monitoring needs (see Section 8). • Remove ignition sources from flammable atmospheres. • Coordinate with local fire-fighting groups regarding potential fire/explosion situations. • Establish contingency plans and review daily with team members. • Other: NA
Heat Stress	1,2,3,4,5,6	• Provide cool break area and adequate breaks. • Provide cool noncaffeinated beverages. • Promote heat stress awareness.
Heat Stress (Cont.)	1,2,3,4,5,6	• Use active cooling devices (e.g., cooling vests) where specified. • See *Heat Stress Prevention and Treatment* (attached at the end of this plan if heat stress is a potential hazard).
Heavy Equipment Operation	NA	• Define equipment routes, traffic patterns, and site-specific safety measures. • Ensure that operators are properly trained and equipment has been properly inspected and maintained. Verify back-up alarms. • Ensure that ground spotters are assigned and informed of proper hand signals and communication protocols. • Identify special PPE (Section 7) and monitoring (Section 8) needs.
	NA	• Ensure that field personnel do not work in close proximity to operating equipment. • Ensure that lifting capacities, load limits, etc., are not exceeded. • Other: NA
Heights (Scaffolding, Ladders, etc.)	NA	• Ensure compliance with applicable subparts of 29 CFR 1910. • Identify special PPE needs (e.g., lanyards, safety nets, etc.) • Other: NA
Noise	NA	• Establish noise level standards for on-site equipment/operations. • Inform personnel of hearing protection requirements (Section 7). • Define site-specific requirements for noise monitoring (Section 8). • Other: NA
Overhead Obstructions	1,2,3,4,5,6	• Wear hard hat. • Other: NA

Hazard	Task Number	Hazard Control Measures
Power Tools	NA	• Ensure compliance with 29 CFR 1910 Subpart P. • Other: NA
Sunburn	1, 2, 3, 4, 5, 6	• Apply sunscreen. • Wear hats/caps and long sleeves. • Other: NA
Utility Lines	NA	• Identify/locate existing utilities prior to work. • Ensure that overhead, underground, and nearby utility lines are at least 25 feet away from project activities. • Contact utilities to confirm locations, as necessary. • Other: NA
Weather Extremes	1, 2, 3, 4, 5, 6	• Potential hazards: rain • Establish site-specific contingencies for severe weather situations. • Provide for frequent weather broadcasts. • Weatherize safety gear, as necessary (e.g., ensure eye wash units cannot freeze, etc.). • Identify special PPE (Section 7) needs. • Discontinue work during severe weather. • Other: NA
Other:	NA	• NA • NA
Other:	NA	• NA • NA

6.2 CHEMICAL HAZARD EVALUATION AND CONTROL

6.2.1 Chemical Hazard Evaluation

Potential chemical hazards are described by task number in Table 6-1. Hazard Evaluation Sheets for major known contaminants are attached at the end of this plan.

6.2.2 Chemical Hazard Control

An appropriate combination of engineering/administrative controls, work practices, and PPE shall be used to reduce and maintain employee exposures to a level at or below published exposure levels (see Section 6.2.1).

Applicable Engineering/Administrative Control Measures: Limit time spent in Contaminated Areas if possible.

PPE: See Section 7.

6.3 RADIOLOGICAL HAZARD EVALUATION AND CONTROL

6.3.1 Radiological Hazard Evaluation

Potential radiological hazards are described below by task number. Hazard Evaluation Sheets for major known contaminants are attached at the end of this plan.

Table 6-1

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA) PEL	REL	TLV	Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	FID/PID Relative Response	FID/PID Ioniz. Poten. (eV)
1,2,3,4,5,6	Chromic Acid	0.1 mg/m^3		25 mg/m^3	Y	inhalation ingestion eye contact skin contact	respiratory & nasal irritant	NA	—	—
1-6	Cyanide	5mg/m^3		5mg/m^3	Y	inhalation ingestion eye contact skin contact	weakness, headache, confusion, nausea, vomiting	— almond-like	—	15.13
1-6	Hydrochloric Acid	5ppm		5ppm	Y	inhalation ingestion eye contact skin contact	eye burns, skin irritations, nose & throat irritation	1ppm —	—	—
1-6	Hydrogen Cyanide	10ppm		10ppm	Y	inhalation ingestion eye contact skin contact	weakness, headache, confusion, nausea, vomiting, skin or eye irrit.	1ppm —	—	13.91
1-6	Nickel	1mg/m^3		1mg/m^3	Y	inhalation ingestion eye contact skin contact	nausea, vomiting, giddiness, headache skin/eye/resp. tract. Irrit.	—	—	—
1-6	PCBs	1mg/m^3		1mg/m^3	Y	inhalation ingestion eye contact skin contact	vomiting, nausea, fatigue, abdominal pain eye/nose/throat irrit.	—	—	—
1-6	Potassium Cyanide	5mg/m^3		5mg/m^3	Y	inhalation ingestion eye contact skin contact	skin/eye irritant, nausea, headache, Fatigue	— almond-like	—	—
1-6	Sodium Cyanide	5mg/m^3		5mg/m^3	Y	inhalation ingestion eye contact skin contact	skin/eye irritant, nausea, headache, Fatigue	— almond-like	—	—

Note: Use an asterisk (*) to indicate known or suspected carcinogens.

Task Number	Radionuclide	DAC (μCi/ml)	Route(s) of Exposure	Major Radiation(s)	Energy(s) (MeV)	Half-Life
NA	NA	NA	NA	NA	NA	NA

6.3.2 Radiological Hazard Control

Engineering/administrative controls and work practices shall be instituted to reduce and maintain employee exposures to a level at or below the permissible exposure/dose limits (see sections 4.2.3 and 6.3.1). Whenever engineering/administrative controls and work practices are not feasible or effective, any reasonable combination of engineering/administrative controls, work practices, and PPE shall be used to reduce and maintain employee exposures to a level at or below permissible exposure/dose limits.

Applicable Engineering/Administrative Control Measures: NA

PPE: See Section 7.

7. LEVEL OF PROTECTION AND PERSONAL PROTECTIVE EQUIPMENT

7.1 LEVEL OF PROTECTION

The following levels of protection (LOPs) have been selected for each work task based on an evaluation of the potential or known hazards, the routes of potential hazard, and the performance specifications of the PPE. On-site monitoring results and other information obtained from on-site activities will be used to modify these LOPs and the PPE, as necessary, to ensure sufficient personnel protection. The authorized LOP and PPE shall only be changed with the approval of the regional safety coordinator or designee. Level A is not included below because Level A activities, which are performed infrequently, will require special planning and addenda to this SHASP.

Task Number	B	C	D	Modifications Allowed
1	X	(X)		
2	X	(X)		
3	X	(X)		
4	X	(X)		
5	X	(X)		
6		X	(X)	

Note: Use "X" for initial levels of protection. Use "(X)" to indicate levels of protection that may be used as site conditions warrant.

7.2 PERSONAL PROTECTIVE EQUIPMENT

The PPE selected for each task is indicated below. E & E's PPE program complies with 29 CFR 1910.120 and 29 CFR 1910 Subpart I and is described in detail in the CHSP. Refer to 29 CFR 1910 for the minimum PPE required for each LOP.

PPE	Task Number/LOP					
	1	2	3	4	5	6
Full-face APR	✓	✓	✓	✓	✓	✓
PAPR						
Cartridges:						
H						
GMC-H	✓	✓	✓	✓	✓	✓
GMA-H						
Other:						
Positive-pressure, full-face SCBA	✓	✓	✓	✓	✓	
Spare air tanks (Grade D air)	✓	✓	✓	✓	✓	
Positive-pressure, full-face, supplied-air system						
Cascade system (Grade D air)						
Manifold system						
5-Minute escape mask						
Safety glasses						
Monogoggles						
Coveralls/clothing						
Protective clothing:						
Tyvek						✓
Saranex	✓	✓	✓	✓	✓	
Other:						
Splash apron	✓	✓	✓	✓	✓	
Inner gloves:						
Cotton						
Nitrile	✓	✓	✓	✓	✓	✓
Latex						
Other:						

PPE	Task Number/LOP					
	1	2	3	4	5	6
Outer gloves:						
Viton						
Rubber						
Neoprene						
Nitrile	✓	✓	✓	✓	✓	✓
Other:						
Work gloves						
Safety boots (as per ANSI Z41)	✓	✓	✓	✓	✓	✓
Neoprene safety boots (as per ANSI Z41)						
Boot covers (type: Latex)	✓	✓	✓	✓	✓	✓
Hearing protection (type: ear plugs)						
Hard hat	✓	✓	✓	✓	✓	✓
Face shield						
Other:						
Other:						

8. HEALTH AND SAFETY MONITORING

Health and safety monitoring will be conducted to ensure proper selection of engineering/administrative controls, work practices, and/or PPE so that employees are not exposed to hazardous substances at levels that exceed permissible exposure/dose limits or published exposure levels. Health and safety monitoring will be conducted using the instruments, frequency, and action levels described in Table 8-1. Health and safety monitoring instruments shall have been appropriately calibrated and/or performance-checked prior to use.

9. DECONTAMINATION PROCEDURES

All equipment, materials, and personnel will be evaluated for contamination upon leaving the exclusion area. Equipment and materials will be decontaminated and/or disposed and personnel will be decontaminated, as necessary. Decontamination will be performed in the contamination reduction area or any designated area such that the exposure of uncontaminated employees, equipment, and materials will be minimized. Specific procedures are described below.

Equipment/Material Decontamination Procedures (specified by work plan): Dry decon of equipment and personnel if possible. If necessary, ~~damp~~ paper towels will be used to clean equipment.

Ventilation: All decontamination procedures will be conducted in a well-ventilated area.

Table 8-1

HEALTH AND SAFETY MONITORING

Instrument	Task Number	Contaminant(s)	Monitoring Location	Monitoring Frequency	Action Levels[a]	
☒ PID (e.g., HNu IS-101) ☐ FID (e.g., OVA 128-GC)	1-5	organics	entire site in walk-thru ↔ during drum opening ↔		**Unknown Vapors** Background to 1 ppm: Level D 1 to 5 ppm above background: Level C 5 to 500 ppm above background: Level B >500 ppm above background: Level A	**Contaminant-Specific**
Oxygen Meter/Explosimeter	1	oxygen & explosive levels	entire site	during walk-thru	**Oxygen** <19.5% or >25.0%: Evacuate area; eliminate ignition sources; reassess conditions. 19.5 to 25.0%: Continue work in accordance with action levels for other instruments.	**Explosivity** ≤10% LEL: Continue work in accordance with action levels for other instruments; monitor continuously for combustible atmospheres. >10% LEL: Evacuate area; eliminate ignition sources; reassess conditions.
Radiation Alert Monitor (Rad-mini or RAM-4)	NA	NA	NA	NA	<0.1 mR/hr: Continue work in accordance with action levels for other instruments. ≥0.1 mR/hr: Evacuate area; reassess work plan and contact radiation safety specialist.	
Mini-Ram Particulate Monitor	NA	NA	NA	NA	**General/Unknown** Evaluate health and safety measures when dust levels exceed 2.5 milligrams per cubic meter.	**Contaminant-Specific**
HCN/H_2S (Monitox)	1-5	HCN	continuous		≥4 ppm: Leave area and consult with SSO.	
Draeger Colorimetric Tubes	1-5	chromic acid nitric acid hydrogen cyanide	inside buildings	during walk-thru & drum sampling	**Tube** / **Action Level** / **Action** chromic acid nitric acid hydrogen cyanide	

Table 8-1

HEALTH AND SAFETY MONITORING

Instrument	Task Number	Contaminant(s)	Monitoring Location	Monitoring Frequency	Action Levels[a]
Air Monitor/Sampler Type:_____ Sampling medium: _____	NA	NA	NA	NA	**Action Level** **Action**
Personal Sampling Pump Type:_____ Sampling medium: _____	NA	NA	NA	NA	**Action Level** **Action**
Micro R Meter	NA	NA	NA	NA	<2 mR/hr: Continue work in accordance with action levels for other instruments. 2 to 5 mR/hr: In conjunction with a radiation safety specialist, continue work and perform stay-time calculations to ensure compliance with dose limits and ALARA policy. >5 mR/hr: Evacuate area to reassess work plan and evaluate options to maintain personnel exposures ALARA and within dose limits.
Ion Chamber	NA	NA	NA	NA	See micro R meter action levels above.
Radiation Survey Ratemeter/Scaler with External Detector(s)	1	radiation	Inside Buildings	During site walk-through	**Detector** **Action Level** **Action**
Noise Dosimeter (Sound Level Meter)	NA	NA	NA	NA	≤85 decibels as measured using the A-weighed network (dBa): Use hearing protection if exposure will be sustained throughout work shift. >85 dBA: Use hearing protection. >120 dBA: Leave area and consult with safety personnel.
Other:	NA	NA	NA	NA	
Other:	NA	NA	NA	NA	

[a] Unless stated otherwise, airborne contaminant concentrations are measured as a time-weighted average in the worker's breathing zone. Acceptable concentrations for known airborne contaminants will be determined based on OSHA/NIOSH/ACGIH and/or NRC exposure limits.

Personnel Decontamination Procedures: Dry decon only.

PPE Requirements for Personnel Performing Decontamination: NA

Personnel Decontamination in General: Following appropriate decontamination procedures, all field personnel will wash their hands and face with soap and potable water. Personnel should shower at the end of each work shift.

Disposition of Disposable PPE: Disposable PPE must be rendered unusable and disposed as indicated in the work plan.

Disposition of Decontamination Wastes (e.g., dry wastes, decontamination fluids, etc.): Wastes to be left onsite or disposed of by U.S. EPA.

10. EMERGENCY RESPONSE

This section contains additional information pertaining to on-site emergency response and does not duplicate pertinent emergency response information contained in earlier sections of this plan (e.g., site layout, monitoring equipment, etc.). Emergency response procedures will be rehearsed regularly, as applicable, during project activities.

10.1 EMERGENCY RESPONSIBILITIES

All Personnel: All personnel shall be alert to the possibility of an on-site emergency; report potential or actual emergency situations to the team leader and SSO; and notify appropriate emergency resources, as necessary.

Team Leader: The team leader will determine the emergency actions to be performed by E & E personnel and will direct these actions. The team leader also will ensure that applicable incidents are reported to appropriate E & E and client project personnel and government agencies.

SSO: The SSO will recommend health/safety and protective measures appropriate to the emergency.

Other: NA

10.2 LOCAL AND SITE RESOURCES (including phone numbers)

Ambulance: 911

Hospital: Children's Medical Hospital One Children's Way Dayton OH

Directions to Hospital (map attached at the end of this plan): ER: (513) 226-8320

Exit onto Valley Street going south, Children's Hospital is on left ~ ½ mile from site.

Poison Control: (513) 222-2227

Police Department: Dayton Police Department 911

Fire Department: Dayton Fire Department 911

Client Contact: Steve Renninger, U.S. EPA OSC (216) 835-5200

Site Contact: NA

On-Site Telephone Number: NA

Cellular Telephone Number: Available in OSC Renninger's vehicle (313) 917-2192

Radios Available: 2-way radios to be supplied by START

Other: NA

10.3 E & E EMERGENCY CONTACTS

E & E Emergency Response Center (24 Hours):	716/684-8940
Corporate Health and Safety Director, Dr. Paul Jonmaire:	716/684-8060 (office) 716/655-1260 (home)
Corporate Safety Officer, Tom Siener:	716/684-8060 (office) 716/662-4740 (home)
Regional Safety Coordinator, Dean Tiebout:	312/663-9415 (office) 312/338-4423 (home)
Regional Office Manager, Jerome Oskvarek:	312/663-9415 (office) 312/775-7040 (home)

10.4 TOXICOLOGICAL EMERGENCIES

In the event of a toxicological emergency, personnel should call the E & E Emergency Response Center for assistance.

10.5 OTHER EMERGENCY RESPONSE PROCEDURES

On-Site Evacuation Signal/Alarm (must be audible and perceptible above ambient noise and light levels): 3 blasts on car horn.

On-Site Assembly Area:

Emergency Egress Route to Get Off Site: Exit through all parking areas to Valley Street Fence Gate.

Off-Site Assembly Area: Outside site gate on Valley Street

Preferred Means of Reporting Emergencies: Call 911 and activate EMS (Emergency Medical System).

Site Security and Control: In an emergency situation, personnel will attempt to secure the affected area and control site access.

Emergency Decontamination Procedures: Decontaminate personnel to the greatest extent possible on the premises without endangering life.

PPE: Personnel will don appropriate PPE when responding to an emergency situation. The SSO and Section 7 of this plan will provide guidance regarding appropriate PPE.

Emergency Equipment: Appropriate emergency equipment is listed in Attachment 1. Adequate supplies of this equipment shall be maintained in the support area or other approved work location.

Incident Reporting Procedures: Call 911, call NRC if a spill is involved.

ATTACHMENT 1
EQUIPMENT/SUPPLIES CHECKLIST

INSTRUMENTATION	No.	EMERGENCY EQUIPMENT	No.
OVA	1	First aid kit	1
Thermal desorber		Stretcher	
O_2/explosimeter w/cal. kit	1	Portable eye wash	
Photovac tip	1	Blood pressure monitor	
HNu (probe: _____ eV)		Fire blanket	
Magnetometer		Fire extinguisher	
Pipe locator		Thermometer (medical)	
Weather station		Spill kit	
Draeger tube kit (tubes: HCN, chromic acid, nitric acid)	1		
Brunton compass			
Real-time cyanide monitor	1		
Real-time H_2S monitor			
Heat stress monitor			
Noise equipment		**DECONTAMINATION EQUIPMENT**	
Personal sampling pumps and supplies		Wash tubs	
MiniRam dust monitor		Buckets	2
Mercury monitor		Scrub brushes	2
Spare batteries (type: _____)		Pressurized sprayer	
GPS	1	Spray bottle	
		Detergent (type: Alconox)	1
RADIATION EQUIPMENT/SUPPLIES		Solvent (type: _____)	
Documentation forms		Plastic sheeting	
Portable ratemeter		Tarps and poles	
Scaler/ratemeter		Trash bags	Box
1" NaI gamma probe		Trash cans	
2" NaI gamma probe		Masking tape	
ZnS alpha probe		Duct tape	2 rls
GM pancake probe		Paper towels	2 rls
Tungsten-shielded GM probe		Face mask	
Micro R meter		Face mask sanitizer	
Ion chamber		Step ladders	
Alert monitor		Distilled water	2 gal
Pocket dosimeter		Deionized water	
Dosimeter charger			
Radiation warning tape			
Radiation decon supplies			
Spare batteries (type: _____)			
SAMPLING EQUIPMENT		**MISCELLANEOUS (Cont.)**	
8-oz. bottles	2 cs	Gatorade or equivalent	
Half-gallon bottles		Tables	

ATTACHMENT 1
EQUIPMENT/SUPPLIES CHECKLIST

VOA bottles		Chairs	
String	✓	Weather radio	
Hand bailers	Box	Two-way radios	2
Thieving rods with bulbs	Box	Binoculars	
Spoons		Megaphone	
Knives		Cooling vest	
Filter paper			
Bottle labels			
		SHIPPING EQUIPMENT	
		Coolers	1
MISCELLANEOUS		Paint cans with lids, 7 clips each	
Pump		Vermiculite	
Surveyor's tape		Shipping labels	
100' Fiberglass tape		DOT labels:	
300' Nylon rope		"Up"	
Nylon string		"Danger"	
Surveying flags		"Inside Container Complies ..."	
Camera	1	Hazard Group	
Film	✓	Strapping tape	
Bung wrench	✓	Baggies	✓
Soil auger		Custody seals	
Pick		Chain-of-custody forms	
Shovel		Federal Express forms	
Catalytic heater		Clear packing tape	
Propane gas		Permanent markers	
Banner tape			
Surveying meter stick			
Chaining pins and ring			
Logbooks (_____ large, _____ small)			
Required MSDSs			
Intrinsically safe flashlight	✓		
Potable water			

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SITE-SPECIFIC HEALTH AND SAFETY PLAN ACCEPTANCE

Project: Dayton Electroplating

Project No.: KJ5100 | TDD/PAN No.: 505-9609-018/6P1801SI

Project Location: 1030 Valley Street, Dayton OH 45404

Project Manager: Karen M. Waldron | Project Director: NA

The undersigned acknowledge that they have read and understood and agree to abide by the health and safety plan.

Name (Printed)	Name (Signature)	Date

COLD STRESS PREVENTION AND TREATMENT

Cold temperatures are potentially hazardous, especially when work is conducted without appropriate precautions. The following sections describe cold stress prevention and the recognition and treatment of cold stress emergencies.

Preventing Emergencies Due to Cold Stress

When working in situations where the ambient temperature is low, especially if low temperatures are accompanied by windy conditions, personnel should use the following cold-stress prevention measures:

- Wear warm, dry, loose-fitting clothing that is preferably worn in layers. Outer clothing should be waterproof and windproof. Inner clothing should be capable of retaining warmth even when it is wet (e.g., wool or polypropylene) or have wicking capabilities (to draw moisture and perspiration away from the skin).
- Wear lined and insulated footwear and warm gloves or mittens.
- Alternately remove and don clothing layers as necessary to regulate body temperature and reduce excess perspiration.
- Drink warm fluids as often as desired.
- Take frequent breaks to provide for cold stress monitoring.

Cold Stress Emergencies

Hypothermia. Exposure to cold can cause the body's internal temperature to drop to a dangerously low level. Hypothermia occurs when a person's body loses heat faster than it can be produced. The body's normal deep-body temperature is approximately 98.6 degrees Fahrenheit. If body temperature drops to 95 degrees Fahrenheit, uncontrollable shivering may occur. If cooling continues, these other symptoms may occur:

- Vague, slow, slurred speech;
- Forgetfulness, memory lapses;
- Inability to use hands;
- Frequent stumbling;
- Drowsiness;
- Exhaustion, collapse;
- Unconsciousness; and
- Death.

Hypothermia impairs the judgment of the victim. Hypothermia is possible even in temperatures above freezing and can be prevented by remaining warm and dry and avoiding overexposure to the cold.

If a person shows symptoms of hypothermia, perform the following:

- Remove the victim from exposure to wet and cold weather.
- Remove wet clothing.
- If the victim is only mildly affected, provide warm drinks and dry clothing.
- If the victim is more seriously affected (clumsy, confused, unable to shiver), begin safe-warming procedures such as hugging, wrapping in dry blankets, and the use of warm objects such as hot water bottles or heat packs, and arrange for evacuation. Do not give the victim warm drinks until he or she exhibits a clear level of consciousness and appears to be warming up.

Frostbite. Frostbite occurs when body tissue freezes. Severe frostbite can lead to reduced circulation and the possible need for amputation. To prevent frostbite, maintain good circulation and keep extremities warm and dry. In extreme cold, it is important to prevent heat loss from as many areas of the body as possible. Exposed limbs and the head are major areas of heat loss.

Tall, thin people; those in poor physical condition; people with chronic diseases; heavy smokers; children; the elderly; and those who have been drinking alcohol are more susceptible to frostbite than other people due to poor circulation, poor production of body heat, or both.

There may be no pain or numbness experienced with gradual freezing of body tissues. While in the cold, it is important to test extremities for sensation and ensure that clothing is loose-fitting and warm. Exposed parts of the body should be inspected routinely. Just before freezing, skin becomes bright red. As freezing continues, small white patches will appear and the skin will become less elastic, often remaining pitted after it is touched or squeezed.

Serious freezing is most common in the feet because people are less aware of them, circulation and sensation are poorer, and warm footwear is difficult to obtain. Hands are usually the next to freeze. Exposed parts of the head will freeze less rapidly because they are conditioned to exposure and have a better blood supply.

In very cold weather, avoid touching cold metal with bare body parts. In the event that this happens, release the skin gently using heat, warm water, or urine. Avoid handling gasoline, kerosene, or similar liquids which, when handled in cold weather, can cause immediate frostbite.

If a person shows symptoms of frostbite, consult a medical professional, if possible, and perform the following:

- Initiate rewarming only if subsequent refreezing is not a possibility (thawing and refreezing should always be avoided because this is very injurious to tissue). Rewarm body parts in water that is approximately 100 to 105

60 to 70 degrees F	120 minutes
50 to 60 degrees F	180 minutes

One method of measuring the effectiveness of an employee's rest-recovery regime is by monitoring the heart rate. The "Brouha guideline" is one such method and is performed as follows:

- Count the pulse rate for the **last** 30 seconds of the first minute of a 3-minute period, the **last** 30 seconds of the second minute, and the **last** 30 seconds of the third minute; and
- Double each result to yield beats per minute.

If the recovery pulse rate during the last 30 seconds of the first minute is 110 beats/minute or less, and the deceleration between the first, second, and third minutes is **at least** 10 beats/minute, then the work-recovery regime is acceptable. If the employee's rate is above the rate specified, a longer rest period will be required, accompanied by an increased intake of fluids.

Heat Emergencies

Heat Cramps. Heat cramps usually affect people who work in hot environments and perspire a great deal. Loss of salt from the body causes very painful cramps in leg and abdominal muscles. **Heat** cramps may also result from drinking iced water or other drinks either too quickly or in too large a quantity. The symptoms of heat cramps are:

- Painful muscle cramps in legs and abdomen;
- Faintness; and
- Profuse perspiration.

To provide emergency care for heat cramps, move the patient to a cool place. Give him or her sips of liquids such as Gatorade or its equivalent. Apply manual pressure to the cramped muscle. Move the patient to a hospital if there is any indication of a more serious problem.

Heat Exhaustion. Heat exhaustion also may occur in individuals working in hot environments and may be associated with heat cramps. Heat exhaustion is caused by the pooling of blood in the vessels of the skin. The heat is transported from the interior of the body to the surface by the blood. The skin vessels become dilated and a large amount of blood is pooled in the skin. This condition, plus the blood that is pooled in the lower extremities when in an upright position, may lead to an inadequate return of blood to the heart and eventual physical collapse. The symptoms of heat exhaustion are:

- Weak pulse;
- Rapid and usually shallow breathing;
- Generalized weakness;
- Pale, clammy skin;

degrees Fahrenheit. Do not try to thaw the body parts using cold water, snow, or intense heat from fires or stoves. The whole body may be immersed in warm water if necessary.

- If a large portion of an extremity is frozen when rewarming is initiated, the deep body temperature may drop as cooled blood begins to circulate throughout the body. Provide warm liquids to alleviate this situation.

- Move the afflicted part gently and voluntarily during rewarming.

- Use pain medication if it is available. Rewarming can be acutely painful. After thawing is completed, a deep pain may persist for several days, depending on the severity of the frostbite. Pain may be a good sign as it indicates that nerve function is present.

- A dull purple color, swelling, or blisters indicate serious injury and the need for medical attention. Consult a medical professional.

HEAT STRESS PREVENTION AND TREATMENT

Elevated temperatures are potentially hazardous, especially when work is conducted without appropriate precautions. The following sections describe heat stress prevention and the recognition and treatment of heat emergencies.

Effects of Heat

A predictable amount of heat is generated as a result of normal oxidation processes within the body. If heat is liberated rapidly, the body cools to a point at which the production of heat is accelerated, and the excess heat brings the body temperature back to normal.

Interference with the elimination of heat leads to its accumulation and to the elevation of body temperature. This condition produces a vicious cycle in which certain body processes accelerate and generate additional heat. Afterward, the body must eliminate not only the heat that is normally generated but also the additional quantities of heat.

Most body heat is brought to the surface by the bloodstream and escapes to cooler surroundings by conduction and radiation. If moving air or a breeze strikes the body, additional heat is lost by convection. When the temperature of the surrounding air becomes equal to or rises above the body temperature, all the heat must be lost by vaporization of the moisture or sweat from skin surfaces. As the air becomes more humid (contains more moisture), vaporization from the skin decreases. Weather conditions including high temperatures (90 to 100 degrees F), high humidity, and little or no breeze cause the retention of body heat. Such conditions or a succession of such days (a heat wave) increase the chances of a medical emergency due to heat.

Preventing Emergencies Due to Heat

When working in situations where the ambient temperatures and humidity are high, and especially in situations where protection levels A, B, or C are required, the site safety officer should:

- Ensure that all employees drink plenty of fluids (Gatorade or its equivalent);
- Ensure that frequent breaks are scheduled so overheating does not occur; and
- Revise work schedules, when necessary, to take advantage of the cooler parts of the day (i.e., 5:00 a.m. to 11:00 a.m. and 6:00 p.m. to nightfall).

When protective clothing is required, the suggested guidelines correlating ambient temperature and maximum wearing time per excursion are:

Ambient Temperature	Maximum Wearing Time per Excursion
Above 90 degrees F	15 minutes
85 to 90 degrees F	30 minutes
80 to 85 degrees F	60 minutes
70 to 80 degrees F	90 minutes

60 to 70 degrees F	120 minutes
50 to 60 degrees F	180 minutes

One method of measuring the effectiveness of an employee's rest-recovery regime is by monitoring the heart rate. The "Brouha guideline" is one such method and is performed as follows:

- Count the pulse rate for the **last** 30 seconds of the first minute of a 3-minute period, the **last** 30 seconds of the second minute, and the **last** 30 seconds of the third minute; and

- Double each result to yield beats per minute.

If the recovery pulse rate during the last 30 seconds of the first minute is 110 beats/minute or less, and the deceleration between the first, second, and third minutes is **at least** 10 beats/minute, then the work-recovery regime is acceptable. If the employee's rate is above the rate specified, a longer rest period will be required, accompanied by an increased intake of fluids.

Heat Emergencies

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- Faintness; and

- Profuse perspiration.

To provide emergency care for heat cramps, move the patient to a cool place. Give him or her sips of liquids such as Gatorade or its equivalent. Apply manual pressure to the cramped muscle. Move the patient to a hospital if there is any indication of a more serious problem.

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- Weak pulse;

- Rapid and usually shallow breathing;

- Generalized weakness;

- Pale, clammy skin;

- Profuse perspiration;
- Dizziness/faintness; and
- Unconsciousness.

To provide emergency care for heat exhaustion, move the patient to a cool place and remove as much clothing as possible. Have the patient drink cool water, Gatorade, or its equivalent. If possible, fan the patient continually to remove heat by convection, but do not allow chilling or overcooling. Treat the patient for shock and move him or her to a medical facility if there is any indication of a more serious problem.

Heat Stroke. Heat stroke is a profound disturbance of the heat-regulating mechanism and is associated with high fever and collapse. It is a serious threat to life and carries a 20% mortality rate. Sometimes this condition results in convulsions, unconsciousness, and even death. Direct exposure to sun, poor air circulation, poor physical condition, and advanced age (over 40) increase the chance of heat stroke. Alcoholics are extremely susceptible. The symptoms of heat stroke are:

- Sudden onset;
- Dry, hot, and flushed skin;
- Dilated pupils;
- Early loss of consciousness;
- Full and fast pulse;
- Deep breathing at first, followed by shallow or faint breathing;
- Muscle twitching, growing into convulsions; and
- Body temperature reaching 105 to 106 degrees F or higher.

When providing emergency care for heat stroke, remember that it is a life-threatening emergency. Transportation to a medical facility should not be delayed. Move the patient to a cool environment, if possible, and remove as much clothing as possible. Ensure an open airway. Reduce body temperature promptly by dousing the body with water or, preferably, by wrapping the patient in a wet sheet. If cold packs are available, place them under the arms, around the neck, at the ankles, or any place where blood vessels that lie close to the skin can be cooled. Protect the patient from injury during convulsions.

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DAILY SAFETY MEETING RECORD

GENERAL INFORMATION

Project: Dayton Electroplating

Project No: KJ5100 | TDD/PAN No.: 505-9609-018/6P1801SI

Project Location: 1030 Valley Street, Dayton, OH 45404

Date: Time: Weather:

Specific Location:

Planned Activities:

SAFETY TOPICS PRESENTED

Chemical Hazards Update:

Physical Hazards Update:

Radiation Hazards Update:

Review of Previous Monitoring Results:

Protective Clothing/Equipment Modifications:

Special Equipment/Procedures:

Drilling Safety Issues (including testing the operation of drill rig emergency stop switches):

Emergency Procedures:

Additional Topics/Observations:

Team Members' Comments/Suggestions:

DAILY SAFETY MEETING RECORD

INITIAL PROJECT SAFETY CHECKLIST

1. Emergency information reviewed? ____ and made familiar to all team members? ____
2. Route to nearest hospital driven? ___ and its location known to all team members? ___
3. Health and safety plan readily available and its location known to all team members? ___
4. E & E Drilling SOP on site? ___ and available for team member review? ___

ATTENDEES

Meeting shall be attended by all personnel who will be working within the exclusion area. Daily informal update meetings will be held prior to work and when site tasks and/or conditions change.

Name (Printed)	Name (Signature)	Date	Representing (Company/Agency)
Meeting Conducted By:			

THE SIGMA-ALDRICH LIBRARY OF CHEMICAL SAFETY DATA

Explanation of Codes

PROCEDURES FOR SPILLS OR LEAKS

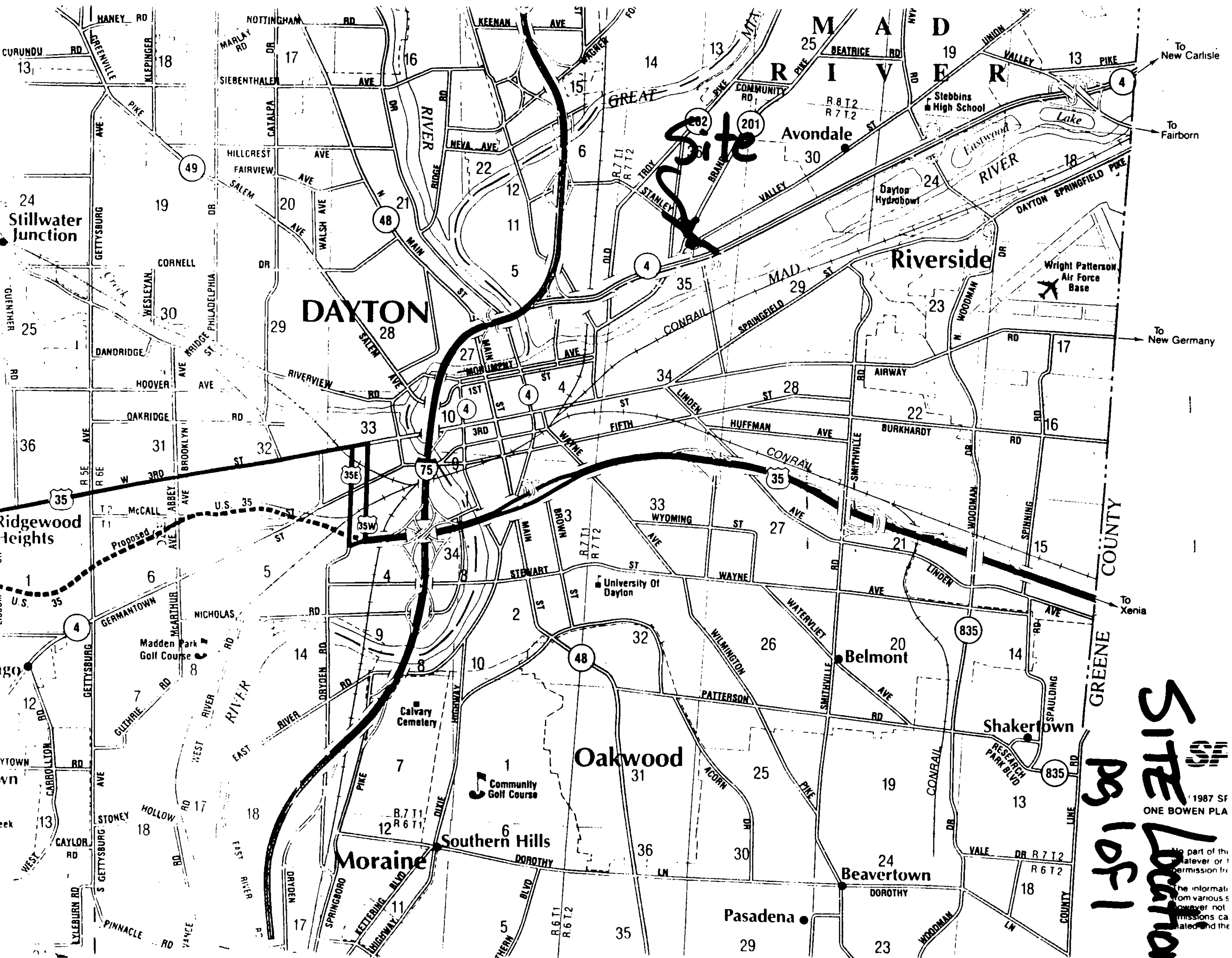
1 Absorb on sand or vermiculite and place in closed container for disposal.
2 Cover with dry lime, sand, or soda ash. Place in covered containers using nonsparking tools and transport outdoors.
3 Shut off all sources of ignition.
4 Evacuate area.
5 Cover with an activated carbon adsorbent, take up and place in closed container. Transport outdoors.
6 Ventilate area and wash spill site after material pickup is complete.
7 Sweep up, place in a bag and hold for waste disposal.
8 Avoid raising dust.
9 Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves.
10 Wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves.
11 Cover with dry lime or soda ash, pick up, keep in a closed container and hold for waste disposal.
12 Carefully sweep up and remove.
13 Flush spill area with copious amounts of water.
14 Mix with solid sodium bicarbonate.
15 Place in appropriate container.
16 Wear protective equipment.
17 Wash spill site with soap solution.
18 Please contact the Technical Services Department. Be sure to mention the name and catalog number of the material.

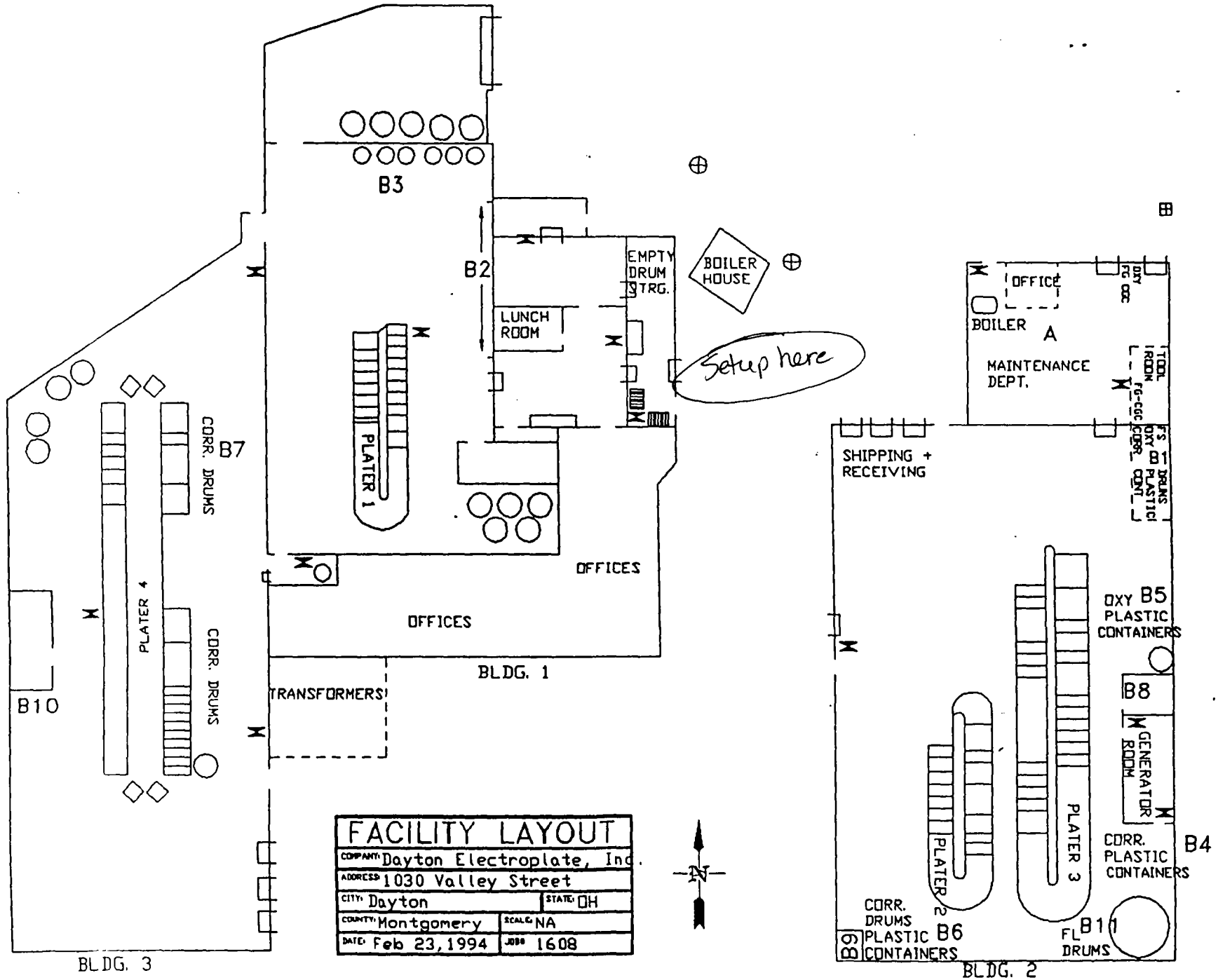
FIRE-EXTINGUISHING MEDIA

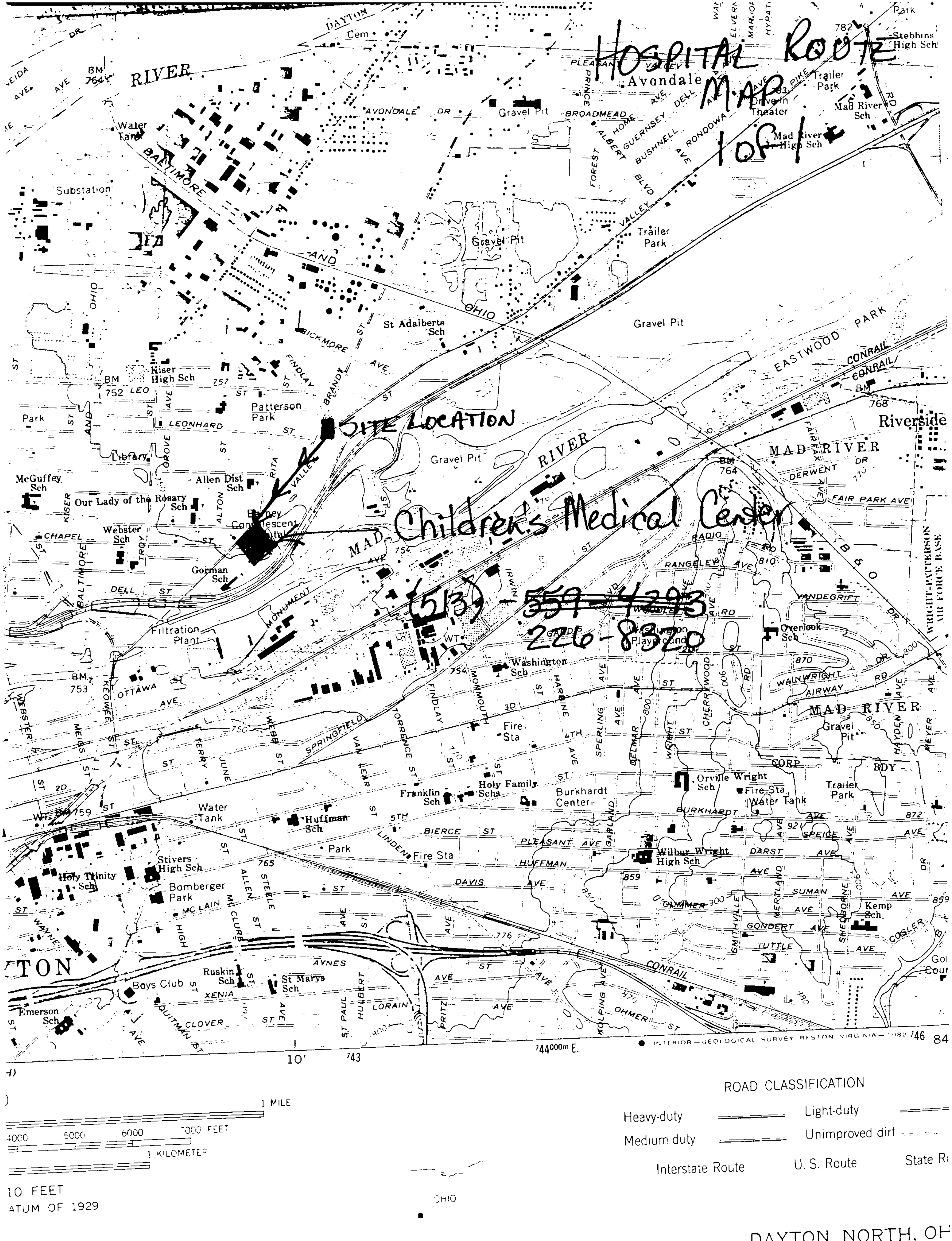
1 Carbon dioxide.
2 Dry chemical powder.
3 Water spray.
4 Alcohol or polymer foam.
5 Class D fire-extinguishing material only.
6 Water may be effective for cooling, but may not effect extinguishment.
7 Carbon dioxide, dry chemical powder, alcohol or polymer foam.
8 Foam and water spray are effective but may cause frothing.
9 Do not use dry chemical powder extinguisher on this material.
10 Do not use carbon dioxide extinguisher on this material.
11 Noncombustible.
12 Do not use water.
13 Use extinguishing media appropriate to surrounding fire condition

Z14,866-0

Sigma-Aldrich Corporation, P.O. Box 355, Milwaukee, Wisconsin 53201 USA
(Sigma: 314-771-5765; Aldrich: 414-273-3850)


DAYTON
MAD RIVER
Riverside
Avondale
Oakwood
Moraine
Southern Hills
Belmont
Shakertown
Beavertown
Pasadena
Stillwater Junction
Ridgewood Heights
Wright Patterson Air Force Base
University Of Dayton
Calvary Cemetery
Community Golf Course
Madden Park Golf Course
Stebbins High School
Dayton Hydrobowl
Eastwood Lake
GREENE COUNTY
To New Carlisle
To Fairborn
To New Germany
To Xenia
Site
SITE Location
Pg 1 of 1
1987 SF
ONE BOWEN PLA


B3
B2
EMPTY DRUM STRG.
BOILER HOUSE
LUNCH ROOM
Setup here
PLATER 1
OFFICES
OFFICES
BLDG. 1
TRANSFORMERS
B10
CORR. DRUMS
B7
PLATER 4
CORR. DRUMS
BLDG. 3
OFFICE
BOILER A
MAINTENANCE DEPT.
TOOL ROOM
SHIPPING + RECEIVING
B1
OXY PLASTIC CONTAINERS
B5
B8
GENERATOR ROOM
PLATER 3
PLATER 2
CORR. PLASTIC CONTAINERS
B4
CORR. DRUMS PLASTIC CONTAINERS
B6
FL DRUMS
B11
BLDG. 2
FACILITY LAYOUT
COMPANY: Dayton Electroplate, Inc
ADDRESS: 1030 Valley Street
CITY: Dayton
STATE: OH
COUNTY: Montgomery
SCALE: NA
DATE: Feb 23, 1994
JOB#: 1608
N


HOSPITAL ROUTE MAP
1 OF 1
SITE LOCATION
Children's Medical Center
(513) - 559-4293
226-8320
RIVER
BALTIMORE
Avondale
AVONDALE DR
Gravel Pit
Trailer Park
Drive-in Theater
Mad River High Sch
Stebbins High Sch
Substation
Water Tank
St Adalberts Sch
Kiser High Sch
Patterson Park
Library
McGuffey Sch
Our Lady of the Rosary Sch
Allen Dist Sch
Barney Convalescent Hospital
Webster Sch
Gorman Sch
Filtration Plant
EASTWOOD PARK
CONRAIL
MAD RIVER
Riverside
MAD AVE
Washington Sch
Washington Playground
Overlook Sch
Fire Sta
SPRINGFIELD
Holy Family Schs
Franklin Sch
Burkhardt Center
Orville Wright Sch
Water Tank
Huffman Sch
Stivers High Sch
Holy Trinity Sch
Bomberger Park
Wilbur Wright High Sch
Kemp Sch
Ruskin Sch
St Marys Sch
Boys Club
Emerson Sch
WRIGHT-PATTERSON AIR FORCE BASE
INTERIOR—GEOLOGICAL SURVEY RESTON VIRGINIA—1982
744000m E.
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
Interstate Route
U.S. Route
1 MILE
7000 FEET
1 KILOMETER
DATUM OF 1929
DAYTON NORTH, OH

ecology and environment, inc.

JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 5-24-90

CHEMICAL NAME: SODIUM CYANIDE

CAS NUMBER: 143-33-9 DOT NAME/ID NO.: RQ:

SYNONYMS:

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: NACN MOLECULAR WEIGHT: 49.01 PHYSICAL STATE: SOLID SPG/D 1.60 SOLUBILITY (H20): SOLUBLE

VAPOR PRESS: 1 MM FREEZING POINT: 563.7 C BOILING POINT: 1496 C FLASH POINT: N/A FLAMMABLE LIMITS: N/A

ODOR CHARACTERISTICS: ODORLESS WHEN DRY

INCOMPATABILIITIES: WHEN MIXED WITH ACID RELEASES HCN GAS, WILL RELEASE SOME HCN WHEN MIXED WITH WATER

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 5 MG/M3 PEL: 5 MG/M3 ODOR THRESHOLD:

HUMAN (LCLO): RAT/MOUSE (LC50): AQUATIC:

CARCINOGEN: NO TERATOGEN: MUTIGEN: NO

ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

SCBA WITH FULL FACEPIECE, SARANAX SUIT, NEOPRENE, VITON, BUTYL RUBBER GLOVES, UNLESS SCBA USED CHEMICAL GOGGLES

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS:

ACUTE SYMPTOMS: SKIN & EYE IRRITANT MAY CAUSE BURNS RAPIDLY, CN IS RAPIDLY ABSORBED THROUGH THE SKIN, TOXIC SYMPTONS CHARACTERIZED BY VERY RAPID, DEATH MAY OCCUR WITHIN SECONDS FOLLOWING EXPOSURE .

CHRONIC SYMPTOMS: CAN PRODUCE NAUSEA, RASH, FATIGUE, HEADACHE, EYE IRRITATION, LITTLE DOCUMENTATION ON CHRONIC EXPOSURES IS AVAILABLE

FIRST AID

INHALATION: REMOVE TO FRESH AIR; ADMINISTER AMYL NITRITE; GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF WATER OR MILK; INDUCE VOMITING; ADMINISTER AMYL NITRITE IF SYMPTONS PRESENT; SEEK MEDICAL ATTENTION

DISPOSAL/WASTE TREATMENT:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [ ] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [X] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER:

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JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 5-18-90

CHEMICAL NAME: CHROMIC ACID

CAS NUMBER: 7738-94-5 DOT NAME/ID NO.: CHROMIC ACID SOLUTION RQ:
SYNONYMS: CHROMIUM TRIOXIDE, CHROMIC ANHYDRIDE

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: H2CR04 MOLECULAR WEIGHT: PHYSICAL STATE: SPG/D SOLUBILITY (H20):
VAPOR PRESS: FREEZING POINT: BOILING POINT: FLASH POINT: N/A FLAMMABLE LIMITS: N/A
ODOR CHARACTERISTICS:
INCOMPATABILIITIES: COMBUSTIBLE OR OTHER READILY - OXIDIZABLE MATERIALS * VARIES WITH FORM PRESENT

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 25 MG/M3 CR PEL: 0.1 MG/M3 ODOR THRESHOLD: N/A
HUMAN (LCLO): N/A RAT/MOUSE (LC50): N/A AQUATIC: N/A
CARCINOGEN: YES TERATOGEN: NOT KNOWN MUTIGEN: NOT KNOWN
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

WEAR SPLASH PROTECTION, FACE SHIELD OR GOGGLES, NEOPRENE GLOVES

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS: MATERIAL IS CORROSIVE ON CONTACT OR INHALATION. MAY CAUSE SEVERE IRRITATION OF NOSE, THROAT, BRONCHIAL TUBES AND LUNGS. IF SWALLOWED, IT MAY CAUSE VOMITING AND STOMACH/ KIDNEY PROBLEMS.

ACUTE SYMPTOMS: RESPIRATORY AND NASAL IRRITANT

CHRONIC SYMPTOMS: SKIN ULCERS, CONJUNCTIVITIS

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES
CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH THIS CHEMICAL

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: DO NOT INDUCE VOMITING; SEEK MEDICAL ATTENTION IMMEDIATELY

DISPOSAL/WASTE TREATMENT:

NEUTRALIZE THE ACID; REDUCE THE CHROMATE TO THE TRIVALENT FORM; DISCHARGE WITH PERMISSION TO A POTW

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [ ] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER:

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JOB NO ZT2051 — HAZARD EVALUATION OF CHEMICALS — PREPARATION/UPDATE DATE 5-22-90

CHEMICAL NAME: CYANIDE

CAS NUMBER: 151-50-8 DOT NAME/ID NO.: PTC OR SCN RQ:
SYNONYMS: POTASSIUM CYANIDE, SODIUM CYANIDE, AG CN

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: KCN OR NACN MOLECULAR WEIGHT: 65.12 PHYSICAL STATE: SOLID SPG/D 1.52 SOLUBILITY (H20): DISOLVES
VAPOR PRESS: 0 MM FREEZING POINT: 1174 F BOILING POINT: 2730 F FLASH POINT: NOT FLAMMABLE FLAMMABLE LIMITS: N/A
ODOR CHARACTERISTICS:
INCOMPATABILIITIES: STRONG OXIDIZER, BASES, CAUSTICS, 02, PEROXIDES, ACIDS

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 5 MG/M3 PEL: 5 MG/M3 ODOR THRESHOLD: ALMOND-LIKE
HUMAN (LCLO): RAT/MOUSE (LC50): AQUATIC: 16 PPM
CARCINOGEN: N/A TERATOGEN: N/A MUTIGEN: N/A
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

GLOVES, FACESHIELD, IMPERVIOUS CLOTHING, AVOID BREATHING VAPORS AND AVOID SKIN CONTACT

MONITORING RECOMMENDATIONS:

CYANIDE MONOTOX; DRAEGER TUBES

HEALTH HAZARDS: INHALATION OR INGESTION OF CYANIDE MAY BE RAPIDLY FATAL, SYMPTOMS MAY INCLUDE LOSS OF CONSCIOUSNESS, CESSATION OF BREATHING AND CONVULSIONS. AT LOWER LEVELS OF EXPOSURE, THE EARLIER SYMPTOMS INCLUDE WEAKNESS, HEADACHE, CONFUSION, NAUSEA, AND VOMITING.

ACUTE SYMPTOMS: WEAKNESS, HEADACHE, CONFUSION, NAUSEA, VOMITING, INCREASED RESPIRATORY RATE, SKIN OR EYE IRRITATION

CHRONIC SYMPTOMS: ASPYXIA, DEATH. DAMAGE TO CARDIOVASCULAR SYSTEM, LIVER, SKIN, KIDNEYS AND CENTRAL NERVOUS SYSTEM

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE AMYL NITRITE PEARLS; GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES
CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH THIS CHEMICAL

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF WATER/MILK; INDUCE VOMITING; SEEK MEDICAL ATTENTION IMMEDIATELY

DISPOSAL/WASTE TREATMENT:

CHEMICAL CONVERSION, CONTROLLED INCINERATION

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [ ] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER:

JOB NO ZT2051 | ecology and environment, inc. HAZARD EVALUATION OF CHEMICALS | PREPARATION/UPDATE DATE 5-23-90

CHEMICAL NAME: HYDROCHLORIC ACID

CAS NUMBER: 7647-01-0 DOT NAME/ID NO.: HCD RQ:
SYNONYMS: MURIATIC ACID, HYDROGEN CHLORIDE,

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: HCL MOLECULAR WEIGHT: 37 PHYSICAL STATE: LIQUID SPG/D 1.19 SOLUBILITY (H20): 62%
VAPOR PRESS: FREEZING POINT: -173 F BOILING POINT: -121 F FLASH POINT: NOT COMBUST FLAMMABLE LIMITS: N/A
ODOR CHARACTERISTICS:
INCOMPATABILIITIES: ALCOLI, METALS

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 5 PPM PEL: 5 PPM ODOR THRESHOLD: 1 PPM
HUMAN (LCLO): RAT/MOUSE (LC50): AQUATIC:
CARCINOGEN: N/A TERATOGEN: N/A MUTIGEN: N/A
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

SPLASH AND EYE PROTECTION,50 PPM USE SCBA, PROTECTIVE CLOTHING TO AVOID CONTACT

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS: IF CONTACTED, FLUSH WITH SOAP AND WATER, IRRIGATE IMMEDIATELY WITH WATER, CONTACT PHYSICAN IMMED

ACUTE SYMPTOMS: EYE BURNS, SKIN IRRTATIONS, NOSE & THROAT IRRITATION

CHRONIC SYMPTOMS: RESPITORY PROBLEMS, DEATH

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES, SEEK MEDICAL ATTENTION

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION:

DISPOSAL/WASTE TREATMENT:

FLUSH WITH WATER OR POWDERED LIMESTONE, SODA OR SODIUM BRCABONATE

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [ ] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [X] SAX
[ ] NIOSH/OSHA POCKET GUIDE
[ ] OTHER:

JOB NO ZT2051 | ecology and environment, inc. HAZARD EVALUATION OF CHEMICALS | PREPARATION/UPDATE DATE 5-23-90

CHEMICAL NAME: HYDROGEN CYANIDE

CAS NUMBER: 74-90-8 DOT NAME/ID NO.: RQ:
SYNONYMS: HYDROCYANIC ACID, PRUSSIC ACID, FORMONITRILE

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: HCN MOLECULAR WEIGHT: 27 PHYSICAL STATE: GAS LIQUID SPG/D 0.689 SOLUBILITY (H20): MISCIBLE
VAPOR PRESS: 0.95 FREEZING POINT: 7 F BOILING POINT: 79 F FLASH POINT: 0 F FLAMMABLE LIMITS: 5.6-40%
ODOR CHARACTERISTICS: ODOR NOT ADEQUATE WARNING PROPERTY SINCE EFFECTS OCCUR RAPIDLY
INCOMPATABILIITIES: BASES, CAUSTICS, O2, PEROXIDES, PLASTIC, ACIDS

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 10 PPM PEL: 10 PPM ODOR THRESHOLD: 1 PPM
HUMAN (LCLO): 200 MG/M3 RAT/MOUSE (LC50): 484 PPM/ AQUATIC: N/A
CARCINOGEN: N/A TERATOGEN: N/A MUTIGEN: N/A
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

SUPPLIED AIR WITH ESCAPE SCBA, SCBA WITH FULL FACE PIECE, AVOID SKIN CONTACT

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS: SYSTEMIC POISON REQIRRIGATE/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MIN

ACUTE SYMPTOMS: WEAKNESS, HEADACHE, CONFUSION, NAUSEA, VOMITING, INCREASED RESPIRATORY RATE, SKIN OR EYE IRRITATION

CHRONIC SYMPTOMS: LITTLE DATA AVAIL, REPORTED SYMPTOMS: DIZZINESS, WEAKNESS, LUNG CONGESTION, HOARSENESS, CONJUNCTIVITIS, LOSS OF APPETITE, WEIGHT LOSS, DERMATITIS

FIRST AID

INHALATION: REMOVE TO FRESH AIR, ADMINISTER AMYL NITRITE; GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF WATER OR WATER; INDUCE VOMITING; SEEK MEDICAL ATTENTION

DISPOSAL/WASTE TREATMENT:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [X] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [ ] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: CASSARETT&DOULL'S TOXICOLOGY, SITTIG

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JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 5-23-90

CHEMICAL NAME: NICKEL

CAS NUMBER: 7440-02-0 DOT NAME/ID NO.: RQ:
SYNONYMS: RANEY ALLOY, NICKEL PARTICLES

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: NI MOLECULAR WEIGHT: 58.7 PHYSICAL STATE: POWDER SPG/D N/A SOLUBILITY (H20): INSOLUBLE
VAPOR PRESS: N/A FREEZING POINT: 2651 F BOILING POINT: 4946 F FLASH POINT: N/A FLAMMABLE LIMITS: N/A
ODOR CHARACTERISTICS:
INCOMPATABILIITIES: STRONG ACIDS, SULFUR, WOOD, POTASSIUM PERCHLORATE, POWDER FORM IS EXPLOSIVE

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 1 MG/M3 PEL: 1 MG/M3 ODOR THRESHOLD: NONE
HUMAN (LCLO): RAT/MOUSE (LC50): AQUATIC:
CARCINOGEN: HUMAN-SUS TERATOGEN: MUTIGEN: EXPER
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

ANY DETECTABLE LIMIT USE SCBA, PREVENT SKIN EXPOSURE OR PORLONGED CONTACT

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS:

ACUTE SYMPTOMS: IRRITATION OF SKIN, EYES, MUCOUS MEMBRANES OF UPPER RESPIRATORY TRACT, NAUSEA, VOMITING, GIDDINESS, HEADACHE

CHRONIC SYMPTOMS: DERMATITIS RESULTING FROM SKIN SENSITIZATION, CANCER OF THE LUNG & NASAL PASSAGES IN NICKEL REFINING EMPLOYEES

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: DO NO INDUCE VOMITING; SEEK MEDICAL ATTENTION TO REMOVE BY GASTRIC LAVAGE

DISPOSAL/WASTE TREATMENT:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [X] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [ ] CHRIS [X] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: ALDRICH

JOB NO ZT2051 | ecology and environment. inc. HAZARD EVALUATION OF CHEMICALS | PREPARATION/UPDATE DATE 5-23-90

CHEMICAL NAME: POLYCHLORINATED BIPHENYL

CAS NUMBER: 53469-21-9 DOT NAME/ID NO.: RQ:
SYNONYMS: AROCHLOR 1242/42% CHLORINE, CHLORODIPHENYL

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: C12H7C13 MOLECULAR WEIGHT: 258 PHYSICAL STATE: DARK LIQUID SPG/D 1.3 SOLUBILITY (H20): INSOLUBLE
VAPOR PRESS: 001 MM FREEZING POINT: -2 F BOILING POINT: 617-691 F FLASH POINT: 349 F FLAMMABLE LIMITS: UNKNOWN
ODOR CHARACTERISTICS:
INCOMPATABILIITIES: STRONG OXIDIZERS

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 1 MG/M3 PEL: 1 MG/M3 ODOR THRESHOLD:
HUMAN (LCLO): 10 MG/M3 RAT/MOUSE (LC50): AQUATIC: 278 PPM
CARCINOGEN: SUS-HUM TERATOGEN: MUTIGEN: ANIM-POS
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

ANY DETECTABLE LIMIT - SCBA, EXCEL-VITON;GOOD-BUTYL, VINYL, NITRILE; POOR-NEOPRENE, SAFETY GOGGLES, CLOTHING TO AVOID CONTACT

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS:

ACUTE SYMPTOMS: IRRITATION OF EYES, NOSE, THROAT, CAN CAUSE VOMITING, EDEMA, ANOREXIA, NAUSEA, ABDOMINAL PAIN, FATIGUE

CHRONIC SYMPTOMS: CHLORACNE FROM PROLONGED SKIN CONTACT, ACUTE & CHRONIC EXPOSURE MAY CAUSE LIVER DAMAGE OR CANCER

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GARGLE WITH WATER AND USE SEDATIVE COUGH MIXTURE

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF SALT WATER; INDUCE VOMITING; SEEK MEDICAL ATTENTION

DISPOSAL/WASTE TREATMENT:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [X] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: RTECS

CHEMICAL NAME: POTASSIUM CYANIDE

CAS NUMBER: 151-50-8 DOT NAME/ID NO.: RQ:
SYNONYMS: HYDROCYANIC ACID POTASSIUM SALT

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: KCN MOLECULAR WEIGHT: 65.12 PHYSICAL STATE: SOLID SPG/D 1.52 SOLUBILITY (H20): SOLUBLE
VAPOR PRESS: FREEZING POINT: 622.5 C BOILING POINT: 1625 C FLASH POINT: N/A FLAMMABLE LIMITS: N/A
ODOR CHARACTERISTICS: HCN ODOR WHEN MOISTURE PRESENT
INCOMPATABILIITIES: ACIDS, NITROGEN TRICHLERIDE, PERCHLERYL FLORIDE, SODIUM NITRITE, ALKALOIDS, CHLORAL HYDRATE, IODINE

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 5 MG/M3 PEL: 5 MG/M3 ODOR THRESHOLD:
HUMAN (LCLO): RAT/MOUSE (LC50): AQUATIC:
CARCINOGEN: NO TERATOGEN: MUTIGEN: NO
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

SCBA WITH FULL FACEPIECE, SARNAX SUIT, NEOPRONE, VITON, VINYL OR BUTYL GLOVES AND BOOTS, IF FULL FACEPIECE RESPIRATION NOT WORN WEAR CHEMICAL GOGGLES

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS:

ACUTE SYMPTOMS: SKIN & EYE IRRITANT MAY CAUSE BURNS RAPIDLY, CN IS RAPIDLY ABSORBED THROUGH THE SKIN, TOXIC SYMPTOMS MAY OCCUR VERY RAPIDLY AND DEATH MAY OCCUR WITHIN SECONDS OF EXPOSURE

CHRONIC SYMPTOMS: CAN PRODUCE NAUSEA, RASH, FATIGUE, HEADACHE, EYE IRRITATION, THERE IS LITTLE DOCUMETNATION AVAILABLE ON CHRONIC EXPOSURES TO HUMANS

FIRST AID

INHALATION: REMOVE TO FRESH AIR, ADMINISTER AMYL NITRATE; GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF WATER OR MILK; INDUCE VOMITING; SEEK MEDICAL ATTENTION

DISPOSAL/WASTE TREATMENT:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [X] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: ALDRICH